imperilling life in which the operation of Battey should be done? What are the cases in which hysterectomy should be practised for fibroids? What part should age take in favoring or discouraging operation in cases of hemorrhage? Is hysterectomy ever advisable in cases of cancer of the portio vaginalis, or in cases of cancer of the cervix? What are the limits of the use of hysterectomy in cases of cancer of the body? In what cases of extrauterine fœtation is laparotomy to be resorted to, and when?

Major gynecology is too young to have laurels; its laudable zeal scarcely requires fostering. Minor gynecology requires pruning and direction, and even preliminary education, rather than fostering.

ON THE DILATATION AND HYPERTROPHY OF THE HEART,

WHICH ARE NOT PRODUCED BY CHANGES IN THE VALVES.

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That all the examples of cardiac hypertrophy and dilatation which we meet with in practice are not due to valvular lesions, is a proposition which every one will admit. That attention has been called to such non-valvular cases by a number of authors is evident to any one who reads medical literature. And yet the recognition of these cases, and their treatment, have not become matters of ordinary practice. It has seemed to me, therefore, that it might be well to group together the cases of cardiac dilatation and hypertrophy not due to valvular disease; to subdivide the group into its appropriate classes; and to state the characteristics of each class.

With the information now available the following seems to be the most convenient classification:

1. Hypertrophy and dilatation due to excessive and prolonged muscular exertion.
2. Hypertrophy and dilatation due to morbid changes in the lungs.
3. Hypertrophy and dilatation associated with the infectious diseases, with anæmia, and with pregnancy.
4. Hypertrophy of the left ventricle with lesions of the arteries.
5. Hypertrophy of the left ventricle with cardiac neurosis.
6. Dilatation of the ventricles with inflammation or degeneration of the walls of the heart.
7. Dilatation of the ventricles occurring without discoverable cause.

1. Hypertrophy and Dilatation due to Excessive and Prolonged Muscular Exertion.—Our knowledge of this form of cardiac

lesion has been largely obtained from observations on soldiers. Da Costa[1] has described this condition, as it existed in the soldiers during the late civil war, under the name of "irritable heart." The clinical history begins, he says, with a diarrhœa, or a continued fever, or prolonged marches. After the previous existence of these conditions the patients begin to have dyspnœa on exertion, palpitation, and pain over the heart. After a time the heart becomes hypertrophied, rarely only dilated. He believes that most cases are amenable to treatment, and that the hypertrophy may diminish.

W. C. McLean[2] says that a large number of cases of hypertrophy and dilatation without valvular lesions are produced in soldiers by long marches, and the pressure of their dress and accoutrements.

Fraentzel[3] gives 19 cases in soldiers: 10 of hypertrophy and dilatation of the left ventricle, 2 of hypertrophy and dilatation of the right ventricle, 3 of hypertrophy and dilatation of both ventricles, and 2 of dilatation of both ventricles. The clinical symptoms were those of feeble and irritable heart. All the patients went through the campaign of the Franco-German war, and developed the cardiac symptoms afterwards.

The same changes in the heart have been described by a number of authors as the result of overexertion in civil life, especially among the laboring classes. T. Clifford Albutt[4] says that the cardiac affections due to physical strain are obstinate irritability and dilatation of both ventricles with or without hypertrophy. Fothergill[5] mentions excessive labor with the arms and in constrained positions in workingmen as causes of dilatation and hypertrophy. In runners and gymnasts he has found dilatation and hypertrophy of the right ventricle. Quain[6] calls attention to the effect both of severe muscular exertions and of violent emotions in producing dilatation and hypertrophy of the heart. Peacock[7] says that the heart is liable to be overstrained from overwork, long-continued hard work, or sudden violent efforts. The cavities become dilated, and the valves incompetent.

J. Seitz[8] has written at considerable length on this subject, and cites twenty-five cases, thirteen of which were his own. Most of the patients were males and hard workers. All were well previous to the overwork; all were improved by rest, and the symptoms returned in all on the least exertion. In most of the cases a murmur, which was sometimes taken for a pericardial or endocardial murmur, was present. He thinks that this murmur is due to the rubbing together of the opposed surfaces of the uninflamed pericardium, or to the enlargement of the opening of the mitral valve, and the consequent insufficiency of the valve.

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[1] Memoirs of U. S. Sanitary Com., p. 372; The American Journal of the Medical Sciences, 1871.

[2] British Med. Journ., 1867, p. 161.

[3] Virch. Arch., lvii. p. 215.

[4] Med. Times and Gazette, 1873, p. 290; St. George's Hosp. Rep., 1870.

[5] Diseases of the Heart. London, 1880.

[6] Lumleian Lectures, Med. Times and Gazette, 1872, p. 352.

[7] Med. Times and Gazette, 1873.

[8] Deutsche Arch. f. klin. Med., xi. and xii.

The clinical picture was that of cardiac weakness, with symptoms referable both to the heart and to the accompanying disturbances of the circulation. In the larger number of the cases, although the symptoms might be alleviated for a time by rest, yet the course of the disease was from bad to worse.

It is a matter of ordinary observation that the repeated training employed in some athletic exercises leads in some individuals to hypertrophy of one or both ventricles. There seems then to be no doubt that prolonged and excessive muscular exertion may produce a well-marked change in the rhythm and size of the heart without lesions of the valves or changes in the structure of the heart wall. In some of the cases the rhythm alone is disturbed; the patients have an irritable heart without any marked change in its size. In other cases in addition to the irritability there are also dilatation and hypertrophy of one or both ventricles, and in some of these cases are added the symptoms due to venous congestion in different parts of the body. In still other cases, although the heart is enlarged, there is no change in its rhythm, and it does not trouble the patient.

2. HYPERTROPHY AND DILATATION DUE TO MORBID CHANGES IN THE LUNGS.—Rokitansky[1] says that increase in the density of the lungs, destruction of the lung-tissue and its capillaries, and any obstruction to the emptying of the pulmonary veins may produce changes in the right heart. Deformities of the chest, pleuritic effusions, emphysema, interstitial pneumonia, and bronchiectasiæ are the ordinary causes of such changes in the lungs.

W. T. Gairdner[2] believes that nine-tenths of all cardiac hypertrophies, independent of valvular disease, are caused by diseases of the lungs.

Stokes[3] finds that dilatation of the heart is most frequently produced by diseases of the lungs and by atheromatous arteries, and is apt to occur in persons who have the gouty diathesis. He has seen no case of simple dilatation not associated with lung or liver disease.

Munzinger[4] gives an account of fifty autopsies of cardiac cases, in forty-two of which there was no valvular disease. He found that disturbances of the lesser circulation produced lesions of the right ventricle, and those of the aortic system lesions of the left ventricle. In workingmen, emphysema of the lungs and dilatation and hypertrophy of the right ventricle of the heart develop side by side. These persons have insufficient food, mostly composed of carbohydrates and liquor; they make great and continuous exertions; they lift and carry heavy weights, run up and down hill, etc. They develop cyanosis, œdema, dyspnœa, a curved back, round shoulders, and anæmia. The heart's impulse becomes diffuse and scarcely visible, and a mitral systolic murmur can be heard. It is the combination of bad food, overexertion, and alcohol which produces at the same time emphysema of the lungs, dilatation of the right and then of the left ventricle, and a feeble heart.

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[1] Path. Anat., vol. ii. p. 259.

[2] Med.-Chir. Rev., July, 1853.

[3] Diseases of the Heart.

[4] Arch. f. klin. Med., 1877, p. 448.

Baümler[1] gives several cases of dilatation and hypertrophy of both ventricles with old pleuritic adhesions and chronic bronchitis. Barlow[2] describes cases of dilatation of the right ventricle with pleuritic adhesions and phthisis.

Altogether the most frequent cause of such changes in the heart, however, is emphysema. The development of the dilatation and hypertrophy first of the right and then of the left ventricle seems to be dependent not on the degree of dilatation of the air spaces, but rather on the interstitial changes in the lung which belong to substantive emphysema. For this reason I imagine that some cases of heart disease due to emphysema are not properly classed, the dilatation of the air vesicles not being very marked. In the more marked examples of emphysema and ventricular dilatation the disturbances of the circulation, and consequent symptoms, are as bad as in the worst cases of valvular disease. The following case is a fair illustration of the course of the disease in many patients.

A male aged 48, had suffered from winter cough for twenty years; for five years dyspnœa on exertion became constantly more annoying; for the last three months the cough and dyspnœa have been much worse; for the past two weeks rapid loss of flesh and strength, dropsy of the legs, scanty urine, orthopnœa, and finally death, with extreme dyspnœa and cyanosis. At the autopsy the lungs presented the lesions of emphysema and bronchitis, the right ventricle of the heart was hypertrophied, the liver, spleen, stomach, intestines and kidneys were in the condition of chronic venous congestion.

3. HYPERTROPHY AND DILATATION ASSOCIATED WITH THE INFECTIOUS DISEASES, WITH ANÆMIA, AND WITH PREGNANCY.—The changes in the ventricles in infectious diseases have been noticed by many observers. M. A. Fabre[3] says that in typhoid fever there is a myocarditis affecting the papillary muscles, followed by incompetency of the mitral valves and dilatation of the left ventricle.

Friedreich[4] mentions a form of dilatation aside from valvular disease or fatty degeneration, which results as a lack of tonus in the heart muscle in the course of puerperal fever, pyæmia, typhoid and typhus fevers. While it is not doubted that an acute parenchymatous change may take place, still, under the above conditions, atonic relaxation and dilatation may simply result.

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[1] Arch. f. klin Med., xix. p. 471.

[2] Guy's Hosp. Rep., 1859, p. 349.

[3] Gaz. des Hôpit., 1877, p. 1083.

[4] Krankh. d. Herz.

Von Dusch[1] says that dilatation has its etiology in the heightened cardiac pressure on the ventricular wall during systole and a diminished elasticity of the walls. The relaxation has its origin in granular degeneration in the infectious diseases.

Goodhart[2] and Barlow[3] describe cases of acute dilatation of the left ventricle as causes of death with scarlatina and dropsy.

Friedländer[4] believes that in nephritis with scarlatina it is the rule to have hypertrophy of the heart combined with dilatation. The hypertrophy results not only from the effects of the scarlatinal poison, but also from the nephritis; it is due to obstructed capillary circulation, diminished secretion of watery elements, and retention of excrementitious matters. When the heart muscle through the scarlatinal poison, the anæmia, or the vomiting, becomes functionally injured, then acute dilatation results. After the urine has become diminished the heart's impulse is spread over a greater area, and the dilatation is ushered in by a murmur both when hypertrophy or dilatation is produced.

It seems evident that dilatation of the heart in typhus and typhoid fevers belongs to some epidemics and not to others, and that it depends principally on the changes in the ventricular wall. In scarlatina, on the contrary, it seems probable that the changes in the heart are principally due to the obstructed circulation in the bloodvessels.

Anæmia is generally recognized to be a cause of enlargement of the heart, both in the temporary anæmia of young women, and the persistent anæmia of pernicious anæmia, leukæmia, etc. It is usually ascribed to the feebleness of the muscles of the heart wall.

Pregnancy is said to be accompanied by hypertrophy of the heart by some authors,[5] but this is denied by others.

4. HYPERTROPHY OF THE LEFT VENTRICLE WITH LESIONS OF THE ARTERIES.—Hypertrophy of the left ventricle is frequently seen with endarteritis of the aortic system, involving either the aorta alone, or the larger arteries also. The general thickening of the walls of the smaller arteries, which is so frequently associated with the atrophic form of chronic Bright's disease is regularly attended with hypertrophy of the left ventricle. When this same condition of hypertrophy of the left ventricle is developed with chronic nephritis without actual disease of the arteries, it seems probable that the unnatural contraction of the smaller arteries may have the same mechanical result.

A congenital narrowing of the aortic system with well-marked dilatation and hypertrophy of the left ventricle, has been described by a number of authors.

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[1] Lehrb. d. Herzkrankh.

[2] Guy's Hosp. Reports, xxiv. p. 153.

[3] Med. Times and Gazette, 1880.

[4] Caust. and Virch. Jahrb., 1878.

[5] Lardner, Arch. Gén., 1859. McDonald, Heart Disease during Pregnancy. Cohnstein, Virch. Arch., 77, p. 146.

5. Hypertrophy of the Left Ventricle with Cardiac Neurosis.—The most frequent examples of this condition are furnished by exophthalmic goitre. In this disease the increased rapidity of the heart's action is regularly followed by hypertrophy of the left ventricle.

A certain number of cases of palpitation of the heart, associated with a variety of causes, are followed after a time by enlargement of the heart. This enlargement is sometimes attended with increased force of the heart's action; in other cases, on the contrary, the rhythm of the heart is irregular and feeble.

6. Dilatation of the Ventricles with Inflammation or Degeneration of the Walls of the Heart.—This form of dilatation seems to be due either to pericarditis, to interstitial myocarditis, or to fatty degeneration.

With severe pericarditis and the formation of extensive adhesions, either one or both of the ventricles may become dilated and hypertrophied. With interstitial myocarditis the dilatation is sometimes general, sometimes circumscribed and aneurismal. With fatty degeneration the heart, although often small, is sometimes enlarged, the ventricles are dilated and their walls thinned.

7. Dilatation of the Ventricles Occurring Without Discoverable Cause.—This seems to me the most interesting of this entire group of cardiac cases. The cases are not at all uncommon; they are met with in ordinary practice, and their nature and causation are very obscure. I include in this set of cases some of those which are said to result from sudden emotions and sudden exertions, and some of those said to have been fatty. None of these can be considered satisfactory causes; and in other similar cases no such conditions existed.

On account of the clinical importance of this group of cases and the moderate number which have been recorded, I shall give a number of examples in detail.

Case I., R. Thompson.[1]—A laborer, aged twenty-three, six days before admission, after work, suddenly experienced pain below the liver; tormina, collapse, orthopnœa, vomiting, small rapid pulse, no cardiac murmur. At the autopsy the heart was found to weigh eighteen ounces; both ventricles were dilated; the valves were not diseased; the muscular tissue of the walls of the ventricles was pale and fatty.

Case II.—A male, aged twenty-eight, on lifting a heavy weight became suddenly ill; pain over the heart; hæmoptysis; vomiting; systolic murmur at the base; pulse 108; apex beat in the sixth interspace. At the autopsy both ventricles were found to be very much dilated; their walls thin; no lesion of the valves; venous congestion of the liver, spleen, and kidneys.

Case III., McDowell.[2]—A female, aged twenty-three, suffered for fifteen months from cardiac palpitation, hæmoptysis, dyspnœa, bronchitis; heart irregular and dilated; systolic murmur; general dropsy. At the autopsy the left ventricle was very much dilated; the valves healthy; the heart muscle of pale brown color.

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[1] St. George's Hospital Reports, 1870, p. 119.

[2] Dublin Med. Journ., 1852, p. 352.

CASE IV.—A female, aged sixty-three, suffered with cyanosis, dyspnœa, systolic apex murmur, irregular heart action. At the autopsy there was found dilatation of both ventricles, without valvular disease.

CASE V.—Moxon[1] relates a case of acute dilatation of the heart, which followed excitement during sexual intercourse. There was found after death dilatation of the left ventricle without ventricular lesions.

CASE VI.—Latham[2] gives a case of a man who ran violently against another person, and subsequently developed palpitation, anasarca, and died with enormous dilatation and hypertrophy of the heart, without valvular disease.

CASE VII.—He also cites the case of a man, who in a paroxysm of rage was forcibly restrained, and subsequently developed cardiac dilatation and dropsy, without valvular lesions.

CASE VIII., Delafield.—A male, aged twenty-six, a farm laborer, was perfectly well until thirteen months before his death. Then, without known cause, he had an attack of oppression in the epigastrium, followed by loss of consciousness and clonic spasms. After half an hour vomiting commenced and lasted several days. Since then he has had four similar attacks at intervals of from two weeks to six months. No cough, dyspnœa, palpitation, or dropsy; but has not been strong enough to work since his first attack. During the last month of his life he had four attacks, each characterized by temporary unconsciousness, persistent vomiting, and pain in the epigastrium; very irregular heart action, the pulse varying from 27 to 190; the heart gave the physical signs of dilatation without murmur. At the autopsy both ventricles of the heart were found very much dilated, without valvular disease. All the viscera were in the condition of venous congestion.

CASE IX., Delafield.—A male, aged twenty-six, a gardener, was perfectly well until three weeks before his death. Then, while lifting a wheelbarrow, he was suddenly seized with dyspnœa. The dyspnœa continued, and was very severe and constant up to the time of his death. The heart was much dilated, its rhythm was very irregular, there was no murmur. After death both ventricles were found to be very much dilated, no change in the muscle of the heart walls, nor in the valves. There was venous congestion of the viscera and dropsy of the venous cavities.

CASE X., Delafield.—A male, aged thirty, a shoemaker, had been troubled for a year with cough and occasional vomiting. Four months before his death dropsy began, and continued. The heart's action was feeble and irregular, there was no murmur. Both ventricles were found dilated, without valvular lesions, or changes in the muscular tissue.

CASE XI., Delafield.—A male, aged twenty-seven, a driver; says that twelve weeks before his death he caught cold and began to have a cough, dyspnœa on exertion, and pain in the epigastrium. Seven weeks before his death he presented the physical signs of dilatation of the heart, without a murmur. He continued to have dyspnœa, developed general anasarca, and died. There was dilatation of both ventricles without valvular disease, and chronic venous congestion of most of the viscera.

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[1] Med. Times and Gaz., 1871.

[2] Diseases of the Heart, 1876, p. 351.

CASE XII., Delafield.—A male, aged forty-two; about five months before his death began to have dyspnœa, palpitation, cough, and mucous expectoration. The dyspnœa continued, dropsy developed, and he died. Both ventricles were much dilated, the heart muscle was not degenerated, the valves were healthy. There was venous congestion of most of the viscera.

CASE XIII., Delafield.—A male, aged forty, said that he had been strong and well until four weeks before his death. Then he suddenly developed extreme dyspnœa so that he had to stop work. The heart's action was rapid and feeble, but there was no murmur. The dyspnœa continued to be most severe up to the time of his death. Both ventricles were dilated, their endocardium was a little thickened, there was a growth of connective tissue between the muscular fibres, with degeneration of the fibres. The aorta presented the lesions of chronic endarteritis. The viscera were congested.

CASE XIV., Delafield.—A male, aged fifty-three; eleven months before his death began to have dropsy of the legs. He lost appetite, flesh, and strength, and the dropsy increased. Then he developed dyspnœa, palpitation, precardial pain, cough with bloody sputa, and vomiting of blood. The heart's action was rapid and feeble, it was dilated, there was a mitral systolic murmur. Both ventricles were much dilated, without hypertrophy, there was a little old thickening of the aortic and mitral valves. The kidneys were examples of the atrophic form of chronic Bright's disease. The lungs were emphysematous.

It is doubtful whether or not this case belongs with this group.

CASE XV., Delafield.—A male, aged forty, suffered for seven weeks from general prostration, cough, great dyspnœa, and constant hæmoptysis. Both ventricles were much dilated, the valves were normal, there was a moderate growth of connective tissue between the muscular fibres of the heart wall. The viscera were congested.

CASE XVI., Delafield.—A male, aged sixty, a grocer; about eight months before his death suddenly developed dyspnœa and dropsy of the legs; these symptoms continued for three months, then he improved until three weeks before death. The dyspnœa became urgent, there was cyanosis, the heart was dilated, its action was feeble and irregular, there was no murmur.

After death both ventricles were found much dilated, there was a little old thickening of the aortic and mitral valves; the viscera were congested.

The cases which I have narrated are evidently not all of exactly the same character, but yet they constitute a convenient clinical group. In most of them no cause at all for the cardiac lesion could be discovered; and in those cases in which there was a history of sudden exertion, or mental emotion, or of change in the wall of the heart, these conditions do not seem at all adequate to explain the cardiac lesion.

Most of the cases were males, and many of them young adults. The invasion of the symptoms was sudden in seven cases, gradual in five, and in three was not stated. The disease ran in some cases an acute, in others a chronic course. In my own cases the shortest period was twenty-four days, the longest fifteen months. The heart's action was irregular and feeble, the physical signs of dilatation were evident, in some of the cases there was a systolic murmur, in others none. The dyspnœa was in most of the cases a marked symptom. I have never seen more distressing dyspnœa than that which existed in some of my cases. Dropsy was developed in the more protracted cases, but not in those of shorter duration. The urine in the cases which I have seen was diminished in quantity, the specific gravity from 1.010 to 1.026, there was no albumen present, or but very little. The dilatation regularly involved both ventricles, and hypertrophy was the exception.

The lungs, liver, stomach, spleen, and kidneys regularly presented the condition of chronic congestion which belongs to marked valvular lesions of the heart.

The course of the disease was from bad to worse, and even the symptoms were but little alleviated by treatment.

SOME OBSERVATIONS ON THE THEORY OF BRONCHIAL ASTHMA,

VIEWED IN THE LIGHT OF THE PATHOLOGY OF HAY FEVER.

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No one who has studied carefully that most admirable treatise of Dr. Blackley on hay fever can justly doubt the general accuracy of his conclusions concerning its causation; and no one can fail to admire both the careful manner in which he has conducted his clinical inquiries and experiments, and the judicial caution which he has exercised in dealing with the results of them. Nevertheless, whilst he has proved conclusively that, *within the range of his experience*, the majority of cases of hay fever are produced by the action upon the nasal mucous membrane of the pollen of certain cereals and grasses, he has not, with adequate clearness and strength, set forth the facts that hay fever may arise from different causes, and at seasons other than the season in which pollen is produced and diffused throughout the air. Further, it is a curious fact that among all the recorded subjects of this disease it is found to be least common among those who are most exposed to the action of pollen. Gardeners, farmers, and agricultural laborers seldom suffer; whilst young men and women of culture in the higher ranks of society are its most common victims. To bring to light the true cause of this malady, to unravel its relations to maladies resembling it, and to get hold of the